IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Applicant: Butterworth	)	Art Unit: 2444
Serial No.: 10/090,404	)	Examiner: Cloud
Filed: March 4, 2002	)	**ARC920010105US1**
For: **SYSTEM AND METHOD FOR DETERMINING WEAK MEMBERSHIP IN SET OF COMPUTER NODES**	)	August 24, 2011 750 B STREET, Suite 3120 San Diego, CA 92101

APPEAL BRIEF

Commissioner of Patents and Trademarks

Dear Sir:

This brief accompanies a Notice of Appeal, filed herewith.

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(1) Real Party in Interest

The real party in interest is IBM Corp.

(2) Related Appeals/Interferences

The Board of Patent Appeals and Interferences previously decided an appeal in the present application, reversing the Examiner's rejections of Claims 1-32, on April 5, 2010 (Appeal 2008-003898).

(3) Status of Claims

Claims 1-33 are pending and more than twice rejected, and all are appealed. Claims 34-41 have been indicated as reciting allowable subject matter and so remain pending *sans* rejections.

(4) Status of Amendments

No amendments are outstanding.

(5) Summary of the Claimed Subject Matter

As an initial matter, it is noted that according to the Patent Office, the concise explanations under this section are for Board convenience, and do not supersede what the claims actually state, 69 Fed. Reg. 155 (August 2004), see page 49976. Accordingly, nothing in this Section should be

construed as an estoppel that limits the actual claim language.

Claim 1 sets forth a computer system (page 3, line 13) that has (page 3, id.) plural nodes (12, figure 1, page 6, first paragraph of Detailed Description; page 3, line 13; page 6, line 15), with each node (page 6, line 15; page 3, lines 13-14) determining (page 3, line 14) a system topography (page 10, line 8), and determining an optimum nodal membership (page 10, line 9) based (page 10, line 10) on the topography. The determining of an optimum nodal membership at each of the plural nodes converges (page 14, line 8) with the determining of an optimum nodal membership on each of the other nodes of the plural nodes in the computer system with each of the plural nodes (page 3, line 18) arriving at (page 5, line 4) the same (page 6, line 15) optimum (page 3, line 19) nodal membership (e.g., page 4, line 1) without having to transmit optimization solutions to the other nodes of the plural nodes (page 11, lines 11-12). The optimum nodal membership that is arrived at by the plural nodes without having to transmit optimization solutions to the other nodes (*id.*) is used by all nodes in the system (page 10, line 11).

Claim 10 is cast in terms of a computer program device that includes a non-transitory computer program storage device readable by a processor (such as a node 12) and a program on the program storage device that includes instructions executable by the processor for determining an optimum membership in a set of nodes in a system. Instructions to the processor (e.g., page 7, lines 9-10) include receiving state changes in the system, e.g., at block 36 of figure 5 and page 11 at the top of the page. Instructions to the processor (*id.*) also include determining the optimum membership based at

least in part on the state changes, e.g., block 38. To this end a random number seed (page 11, line 8) may be used that is made available to at least two nodes in the system with each node arriving at the same optimum membership as the other nodes but independently of optimum memberships developed by the other nodes, *supra*.

Claim 18 recites a method for providing at least first and second nodes (12, figure 1, page 6, first paragraph of Detailed Description; page 3, line 13; page 6, line 15) in a system of nodes with a membership that is identical for each first and second node without requiring the membership to be communicated between the nodes. The method includes providing each node with a random seed, with the random seed being the same at the first node as it is at the second node, block 38 figure 5 and page 11 at the top of the page. Also, the method includes, at the first and second nodes, using the random seed to arrive at (page 5, line 4) a membership in the system of nodes with each node arriving at the same (page 6, line 15) membership as the other nodes but independently (page 6, line 15) of the memberships arrived at by the other nodes.

Claim 25 sets forth a method for establishing, at at least first and second computer nodes (12, *id.*) in a system of computer nodes, an optimization (page 5, line 2) that is identical (page 11, line 14) for each first and second node without requiring the optimization to be communicated between the nodes (page 11, line 14). The method includes executing the optimization at the first node and the second node such that each node must arrive at the same optimization as the other node and independently thereof, supra.

Claim 33 recites a method for providing plural nodes (12, figure 1, page 6, first paragraph of Detailed Description; page 3, line 13; page 6, line 15) in a system of nodes with a membership that is identical for each node. The method includes providing topology information (62, figure 7, page 13, line 4). Also, the method includes providing a respective version of a node membership optimization module to each of plural views (64, figure 7, page 13, lines 5-6), where each version of the node membership optimization module determines a node membership (e.g., page 10, lines 9-11). Further, for each view, a view containing a respective local node is selected (66, figure 7, page 13, lines 6-7) and the nodes subsequently use the node membership (page 10, line 11).

(6) Grounds of Rejection to be Reviewed on Appeal

Claims 1-33 have been rejected under 35 U.S.C. §102 as being anticipated by Elliot, USPN 6,963,747.

(7) Argument

Anticipation Rejections

Claims 1-9

The rejections based on Elliot are clear reversible error. The allegation that col. 5, line 64-col. 6, line 7 teaches that "each" node determines an optimal nodal membership is incorrect. In the relied-upon portion of Elliott only the master node calculates the schedule and does so by

communicating with the other nodes. Reliance on col. 9, lines 25-41 for the claimed limitation that each node arrives at the same optimal membership without having to transmit solutions to the other nodes likewise does not cure the defect because in this portion of the reference each node gathers information and then synchronizes its schedule with other nodes precisely by ***sharing the computed schedules***, lines 28-30 and in general ***disseminating information between nodes***, lines 39-41, in contrast to the explicit requirement of Claim 1 that each of the plural nodes arrives at the same optimum nodal membership ***without having to transmit optimization solutions to the other nodes***. The rejection is based on a clearly erroneous finding of fact as to what Elliott teaches.

The finding of fact that Elliott, figure 3, step 202 teaches using the same seed for all nodes is clearly erroneous. Step 202 refers to the strings in figure 2 and all of them are different strings, albeit of the same length. Obviously the different binary patterns cannot establish a common seed.

The allegation that Elliott, col. 5, line 64 - col. 6, line 2 teaches the modules of Claim 4 is clearly erroneous. Nothing appears in the relied-upon portion of Elliott discussing a module, much less the two modules claimed. The same error infects the rejections of Claims 5 and 6.

The allegation that the determinations of Claim 9 are taught in Elliott at col. 4, lines 29-39 and col. 5, lines 1-5 is clearly erroneous. Nowhere in the relied-upon portion does Elliott discuss returning a most optimum solution responsive to a determination of full connectedness, much less the feature of returning a second-best solution if the second-best solution is fully connected but the best solution is not.

Claims 10-33

Independent Claim 10 has been summarily dismissed as "reciting substantially the same limitations as claims 1 and 3-9", while independent Claims 18 and 25 have been similarly dismissed as "reciting substantially the same limitations as claims 1-5 and 8-9", meaning that an inadequate *prima facie* case has been made against them. Claim 10, for example, recites state changes and actions pertaining thereto, but Claims 1-9 do not recite "state changes" and so brushing off Claim 10 in the cursory way the Office Action attempts is clear legal error.

Reliance on Elliott, col. 7, lines 50-63 to reject the following limitation of Claim 33 is clear error. Claim 33 requires providing a respective version of a node membership optimization module to each of plural views, and that each version of the node membership optimization module determines a node membership and for each view, a view containing a respective local node is selected, with the nodes subsequently using the node membership. The relied-upon portion of Elliott discusses examining nodes when a collision occurs, and reshuffling a node schedule if one occurs. What this has to do with the "views" limitation of Claim 33 is anyone's guess.

Respectfully submitted,

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APPENDIX A - APPEALED CLAIMS

1. A computer system, comprising:

plural computer nodes, each node:

determining a system topography;

determining an optimum nodal membership based on the topography, the determining of an optimum nodal membership at each of the plural nodes converging with the determining of an optimum nodal membership on each of the other nodes of the plural nodes in the computer system with each of the plural nodes arriving at the same optimum nodal membership without having to transmit optimization solutions to the other nodes of the plural nodes, the optimum nodal membership that is arrived at by the plural nodes without having to transmit optimization solutions to the other nodes being used by all nodes in the system.

2. The system of Claim 1, comprising more than two nodes, the determining of an optimum nodal membership being based on a seed, the seed being the same for each node such that each node uses the same seed as every other node in determining the optimum membership, such that the optimum membership arrived at by each node is the same membership arrived at by every other node.

3. The system of Claim 1, wherein determining an optimum membership is undertaken

using a randomized simulated annealing technique.

4. The system of Claim 1, wherein each node includes a link state module undertaking the determining a topology and an optimization module undertaking the determining an optimum membership, the link state module sending the topology to the optimization module.

5. The system of Claim 4, wherein the link state module at each node communicates with at least one link state module at another node in the system.

6. The system of Claim 4, wherein the link state module communicates with a database of links and nodes.

7. The system of Claim 6, wherein elements in the database are periodically refreshed.

8. The system of Claim 4, wherein each node includes an event manager receiving the optimum membership from the optimization module, the optimum membership being used by the event manager during system operations.

9. The system of Claim 4, the optimization module further

iteratively determining plural solutions;

determining which solution is a most desirable solution;

returning the most desirable solution responsive to a determination that the most desirable solution is fully connected; otherwise

returning a next most desirable solution responsive to a determination that the next most desirable solution is fully connected.

10. A computer program device comprising:

a non-transitory computer program storage device readable by a processor; and

a program on the program storage device and including instructions executable by the processor for determining an optimum membership in a set of nodes in a system, the instructions to the processor comprising:

receiving state changes in the system; and

determining the optimum membership based at least in part on the state changes, using a random number seed that is made available to at least two nodes in the system with each node arriving at the same optimum membership as the other nodes but independently of optimum memberships developed by the other nodes.

11. The computer program device of Claim 10, the instructions further comprising:

determining a system topography based on the state changes.

12. The computer program device of Claim 11, wherein the determining an optimum membership instruction causes the processor to use] a randomized simulated annealing technique.

13. The computer program device of Claim 11, wherein the receiving state changes instruction causes the processor to receive messages from at least one remote node in the system.

14. The computer program device of Claim 10, wherein the receiving instruction causes the processor to communicate with a database of links and nodes.

15. The computer program device of Claim 14, the instructions to the processor also comprising refreshing elements in the database.

16. The computer program device of Claim 10, the instructions to the processor further comprising receiving the optimum membership during system operations.

17. The computer program device of Claim 10, wherein the instructions for determining include:

iteratively determining plural solutions;

determining which solution is a most desirable solution;

returning the most desirable solution responsive to a determination that it is fully connected, and otherwise returning a next most desirable solution responsive to a determination that the next most desirable solution is fully connected.

18. A method for providing at least first and second computer nodes in a system of nodes with a membership that is identical for each first and second node without requiring the membership to be communicated between the nodes, comprising the acts of:

providing each node with a random seed, the random seed being the same at the first node as it is at the second node; and

at the first and second nodes, using the random seed to arrive at a membership in the system of nodes with each node arriving at the same membership as the other nodes but independently of the memberships arrived at by the other nodes.

19. The method of Claim 18, wherein the system includes more than two nodes, all nodes in the system being provided with the random seed, the act of using the random seed being undertaken at each node.

20. The method of Claim 18, further comprising:

determining a system topography; and

determining the membership based on the topography.

21. The method of Claim 20, wherein the act of determining a membership is undertaken using a randomized simulated annealing technique.

22. The method of Claim 18, further comprising, at at least plural nodes, communicating state changes to other nodes in the system.

23. The method of Claim 18, comprising using the membership during system operations.

24. The method of Claim 18, further comprising:

iteratively determining plural solutions to a weak membership problem;

determining which solution is a most desirable solution;

returning the most desirable solution responsive to a determination that it is fully connected; otherwise

returning a next most desirable solution responsive to a determination that the next most desirable solution is fully connected.

25. A method for establishing, at at least first and second computer nodes in a system of computer nodes, an optimization that is identical for each first and second node without requiring the optimization to be communicated between the nodes, comprising the acts of:

executing the optimization at the first node and the second node such that each node must arrive at the same optimization as the other node and independently thereof.

26. The method of Claim 25, comprising:

providing each node with a random seed, the random seed being the same at the first node as it is at the second node; and

at the first and second nodes, using the random seed to arrive at the optimization.

27. The method of Claim 26, wherein the system includes more than two nodes, all nodes in the system being provided with the random seed, the act of using the random seed being undertaken at each node.

28. The method of Claim 26, further comprising:

determining a system topography; and

determining the optimization based on the topography.

29. The method of Claim 28, wherein the act of determining an optimization is undertaken using a randomized simulated annealing technique.

30. The method of Claim 26, further comprising, at at least plural nodes, communicating state changes to other nodes in the system.

31. The method of Claim 26, comprising using the optimization during system operations.

32. The method of Claim 26, further comprising:

iteratively determining plural solutions to a problem;

determining which solution is a most desirable solution;

returning the most desirable solution responsive to a determination that it is fully connected; otherwise

returning a next most desirable solution responsive to a determination that the next most desirable solution is fully connected.

33. A method for providing plural nodes in a system of nodes with a membership that is identical for each node, comprising:

providing topology information;

providing a respective version of a node membership optimization module to each of plural views, wherein each version of the node membership optimization module determines a node membership and wherein for each view, a view containing a respective local node is selected, the nodes subsequently using the node membership.

APPENDIX B - EVIDENCE

None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978.)

APPENDIX C - RELATED PROCEEDINGS

NONE